

Data Management  
p.30-34

Types of Graphs Why?

- Bar Graph - Comparisons
- Circle Graph % of a total
- Broken Line graph Rates of Change (time)
- Pictograph - First Interval Scale
- Frequency Table - Record (Simple)
- Interpolate and Extrapolate Responses

Interpolate - answer read directly off information presented on graph

Extrapolate - prediction based off extending the data on the graph

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Measures of Central Tendency

Mean - Average - (Add up Values / # of Values)

Median - Middle Number (Rank Order)

Mode - Most Often

Range - Difference b/w highest and lowest values

Creating Conclusions based on Data

6	3
8	6
8	6
9	6
3	8
10	8
10	9
6	10
	10

Mean  $60/8 = 7.5$

Median  $\frac{8+8}{2} = 8$

Mode 6, 8, 10

Range = 7

In this case

The mean is unreliable because the range is so high. There are multiple modes. Therefore the median is the best predictor.

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Exponents

$4^3$  power

base - exponential form

$4 \times 4 \times 4$  - expanded form

$= 64$  - standard form

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$4^2 \Rightarrow 4 \times 4 = 16$

$4^0 = 1$

Scientific Notation

$4^{-3} = \frac{1}{4^3} = \frac{1}{64}$

$2.5 \times 10^{15}$

$2.5 \times 10^{-8}$

$2^{-5}$

$\frac{1}{2^5}$

$\frac{1}{32}$

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Exponent Laws

Multiplication (same base, add powers)

$2^3 \cdot 2^2$

$= 2^{3+2}$

$= 2^5$

$3^4 \cdot 3^2 \cdot 3^3$

$4+2+3$

$3^9$

$3^4 \cdot 3^{-2} \cdot 3^6$

$4+(-2)+6$

$= 3^8$

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Division (same base, subtract powers)

$\frac{3^4}{3^2}$

$= 3^{4-2}$

$= 3^2$

$\frac{3^6}{3^8}$

$= 3^{6-8}$

$= 3^{-2}$

$= \frac{1}{3^2}$

$\frac{3^2 \cdot 3^3 \cdot 3^1}{3^6}$

$\frac{3^{2+3+1}}{3^6}$

$\frac{3^6}{3^6}$

$= 3^{6-6}$

$= 3^0$

$= 1$

$\frac{2^2}{2^2} = \frac{4}{4} = 1$

$\frac{4^2}{4^2} = \frac{16}{16} = 1$

$\frac{2^3}{2^3} = \frac{8}{8} = 1$

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Exponent Law Same base x powers

$$\begin{aligned} (2^3)^4 &= 2^{3 \times 4} = 2^{12} \\ (3^2)^6 &= 3^{2 \times 6} = 3^{12} \\ (a^2 b^3)^4 &= a^{2 \times 4} b^{3 \times 4} = a^8 b^{12} \end{aligned}$$

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Solve

$$2^3 \cdot 3^4 = (2 \times 2 \times 2) \cdot (3 \times 3 \times 3 \times 3) = (8) \cdot (81) = 648$$

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S = 1:3:4  
= 2:6:8  $\times 2$

Rate  
79 km / 4 h  
19.8 km / 1 h

$$\frac{2}{5} \times 2 = \frac{4}{10}$$

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